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REMARKS

Applicant thanks the Examiner for the very thorough consideration given the present application. Claims 1-20 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-8 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Campbell et al. (hereinafter Campbell, U.S. Pat. No. 5,125,179). This rejection is respectfully traversed.

At the outset, Applicants note independent Claim 1 and amended Claim 16 include the limitation of "the ceramic composite conduit is joined to the metal conduit using the insert." The Examiner states Campbell discloses these features. Applicants respectfully submit the Examiner is misinterpreting Campbell.

Campbell involves a process for forming "high strength nonmetallic tubular structures." (Col. 1, lines 11-12). In particular Campbell discloses "an improved composite tubular structure comprised of an inner precompressed ceramic liner, an intermediate ceramic thermal insulator and an outer layer or sleeve of a graphite and fiber/epoxy composition." (Col. 8, lines 3-7). The Examiner states Campbell discloses "a metal conduit (18,19) [secured] to the insert." Applicants assert the metal conduit, (18,19) described in Campbell is part of the mandrel assembly 16 which is used to form Campbell's nonmetallic tubular structure. (Col. 4, lines 25-50). Furthermore, Campbell cannot be modified to include a metallic tubing as it would modify the intended purpose

of Campbell, that is a nonmetallic tubular structure. (Col. 1, lines 11-13). Accordingly, independent Claims 1 and 16 define over Campbell and requests withdrawal of this rejection is requested. In addition, since Claims 2-8 depend from Claim 1, Claims 2-8 are also believed to define over Campbell. Reconsideration and withdrawal of these rejections are respectfully requested.

Claims 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Davis et al. (hereinafter Davis, U.S. Patent No. 5,208,071). This rejection is respectfully traversed.

Applicants note independent Claim 16 has been amended to include “the ceramic matrix composite conduit is joined to the metal conduit using the insert.” Applicants submit Davis does not disclose or suggest this feature. In particular, Davis involves “an improved method for diffusion coating of surfaces such as chromizing ferritic surfaces.” (Col. 1, lines 14-16). The Examiner states Davis discloses “the assembly comprises a ceramic matrix composite conduit (28), an inner ceramic insert (26) and metal pipes.” Applicants assert the assembly of Davis is a ferritic pipe coated “a high chromium surface layer.” (Col. 1, lines 17-22). The ceramic inserts in Davis are used to impregnate the tubes with chromium, and “can be easily removed, resulting in minimal clean-up.” (Col. 2, lines 59-60). Furthermore, the ceramic matrix composite (28) identified by the Examiner is a part of an alternative embodiment for an insert for use with chromitizing the pipes. Specifically, “an insert 18 is formed of three layers, 26, 28, 30.” (Col. 5, lines 36-37). Thus, Davis does not teach a ceramic matrix composite as claimed. In addition, Davis cannot readily be modified to teach Applicants’ invention as it would render the invention of Davis improper for its intended purpose, wherein ‘the

inserts can be easily removed for minimal clean-up.” (Col. 2, lines 59-60, emphasis added). Hence, Applicants believe independent Claim 16 defines over Davis and requests the withdrawal of this rejection. Additionally, Claim 17 depends on Claim 16 and is also believed to define over Davis. Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 1-3, 5, 8-12, 14-17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Barringer et al. (U.S. Patent No. 5,230,306). This rejection is respectfully traversed.

Independent Claims 1 and 16 include the limitation of “the ceramic matrix composite conduit is joined to the metal conduit using the insert.” Barringer states: “rear coupling member 36 is a metallic member that is threaded onto the swivel tube 34 and welded at 37. A ceramic-to-metal cement is used to join and seal the element [12] to the coupling member 36.” (Col. 5, lines 64-68). Thus, Barringer involves using a ceramic-to-metal cement to join the ceramic element to the metallic coupling member, and not an insert as claimed. Furthermore, Applicants submit Barringer could not be modified to involve the use of an insert, and there is no suggestion in the reference to make this modification. Specifically, Barringer talks exclusively about using ceramic-to-metal cement and cement in general on the joints. Thus, one with ordinary skill would look to alternative forms of cement and not an insert as claimed. Thus, Applicants submit independent Claims 1 and 16 define over Barringer and are in condition for allowance.

With regard to independent Claim 19, Applicants note Claim 19 includes the limitation of “brazing the metal manifold to the silicon nitride insert.” As discussed

previously, Barringer does not teach the use of an insert but rather teaches the use of cements. As such, Applicants submit independent Claim 19 defines over Barringer and is in condition for allowance. Dependent Claims 2-3, 5, 8-9, 11-12, 14, 15, 17 and 20 each depend directly or indirectly from one of independent Claims 1, 10, 16 and 19, and therefore these dependent claims are also believed to be in condition for allowance. Reconsideration and withdrawal of these rejections are respectfully requested.

With regard to Claim 10, Applicants submit Claim 10 includes the limitation of “the ceramic matrix composite nozzle [joined] to the metal manifold using the silicon nitride insert.” As discussed above, Barringer does not teach the use of an insert, but rather teaches the use of cement. Accordingly, Applicants believe Claim 10 defines over Barringer and requests withdrawal of this rejection.

Claims 1-3 and 5-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Okuda et al. (hereinafter Okuda, U.S. Patent No. 5,639,322). This rejection is respectfully traversed.

Applicants submit independent Claim 1 includes the limitation of “at least one metal conduit” and “the ceramic composite conduit is joined to the metal conduit using the insert.” Applicants assert Okuda does not teach Applicants invention. In particular, Okuda involves “an improvement of a joining method for joining two ceramic bodies.” (Col. 1, lines 12-14). The Examiner states Okuda teaches “ceramic matrix composite conduits joined to metal conduits.” Applicants assert the Examiner is misinterpreting the Okuda reference.

Okuda makes no mention whatsoever of joining metal conduit to ceramic conduit via an insert, as claimed in the present application. Okuda only refers to preparing to

join ceramic pipes “in a similar way to a preparation of a metal pipe joint.” (Col. 6, lines 15-16). Okuda makes no mention of joining metal conduit to ceramic conduit, but merely joining ceramic pipe to ceramic pipe similar to a metal pipe joint. Furthermore, to modify Okuda to include a metal conduit would render Okuda improper for its intended purpose of improving “the joining method for joining two ceramic bodies.” (Col. 1, lines 12-13). Thus, Applicants believe independent Claim 1 defines over Okuda and is in condition for allowance. Furthermore, Claims 2-3 and 5-9 depend from Claim 1 are also believed to be in condition for allowance. Withdrawal of this rejection is also respectfully requested.

With regard to independent Claim 10, Applicants submit Claim 10 includes the limitation of “at least one metal manifold” and “the ceramic matrix composite rocket nozzle is joined to the metal manifold using the silicon nitride insert.” As stated previously, Okuda does not teach joining metal conduits to ceramic matrix composite rocket nozzles, but only the joining two ceramic pipes. Moreover, Okuda could not be modified to involve the joinder of metal conduits to ceramic matrix composite rocket nozzles as there is no teaching of this modification and this modification would render Okuda improper for its intended purpose. Accordingly, Applicants believe independent Claim 10 defines over Okuda and requests withdrawal of this rejection. Additionally, Applicants submit Claims 11-15 depend from Claim 10 and are also believed to be in condition for allowance. Reconsideration and withdrawal of these rejections are respectfully requested.



REJECTION UNDER 35 U.S.C. § 103

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Claims 9-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Campbell. This rejection is respectfully traversed.

The Examiner states that Campbell discloses all features of the present invention except for the "disclosure of multiple joints or indication that the joint is used for a rocket nozzle." As discussed previously, Applicants assert Campbell does not teach the present invention as claimed. In particular, independent Claim 10 includes the limitation of "the ceramic matrix composite rocket nozzle is joined to the metal manifold using the silicon nitride insert." Campbell does not teach or disclose a metal manifold joined to a ceramic nozzle, but rather the use of metal conduit in a mandrel assembly which forms a nonmetallic tubing. Campbell cannot be modified to include a metallic manifold as it would render his invention improper for its intended purpose. As such, Applicants believe independent Claim 10 defines over Campbell and is believed to be in condition for allowance. Furthermore, Claims 11-15 depend from Claim 10 and are also believed to be in condition for allowance. Reconsideration and withdrawal of these rejections are respectfully requested. Claim 9 depends from independent Claim 1 which is also believed to be in condition for allowance. Thus, Applicants believe Claim 9 is in condition for allowance and request withdrawal of this rejection.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barranger et al. (U.S. Patent No. 5,230,306). This rejection is respectfully traversed.

With regard to Claim 18, Applicants note Claim 18 depends from independent Claim 16. As stated previously, Applicants believe independent Claim 16 is in condition

for allowance, and thus believe that Claim 18 is also in condition for allowance. Reconsideration and withdrawal of this rejection are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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